EFFECT OF HYPOPHYSECTOMY AND SOMATOTROPHIN ON THE SYNTHESIS AND MATURATION OF COLLAGEN IN GROWING RAT

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This work was prompted by the reports that the amount of collagen is decreased in the tissues of hypophysectomized animals (Scow, R. O. and Hagan, S. N.: Endrocrinology 77, 852, 1965). Hypophysectomized (Sato, M. and Yoneda, S.: Acta endocr. (Kbh.) 51, 43, 1966) (weights 55 and 56 g) and normal rats of the same age (7 weeks, weights 135 and 142 g, respectively) and of the same weight were injected with somatotrophin (Somacton®, Ferring AB, 4 × 2 μg/g/day) and ^{3}H-L-proline-G (0.5 μCi/g) simultaneously with the first injection of hormone. Skin collagen was fractionated to NaCl- and acetic acid-soluble fractions and the radioactivity of hydroxyproline was determined with liquid scintillation method.

Hypophysectomy decreased the amount of NaCl-soluble collagen from 55 % of total collagen to 23 % but increased the acetic acid-soluble pool from 31 % to 55 % as compared to normal rats of the same weight. In comparison to rats of the same age no difference was observed.

The hypophysectomy itself diminished the incorporation to about a third. A short treatment with somatotrophin stimulated proportionally more the synthesis of collagen than its maturation. This conclusion was confirmed with experiments on viscose-cellulose-induced granuloma implanted in young hypophysectomized rats.